Comments and responses on the draft TMDLs for bacteria in Goose Creek

Comments from Piedmont Environmental Council

1. *I continue to be appalled by the lack of notice given to the landowners and stakeholders in this entire watershed and particularly those in the impaired watershed of Cromwell's Run in Northern Fauquier County. Your office seems to think that it has sufficiently notified the interested parties in the entire area but if you asked those people, I doubt that 1% of those polled would have known about the meeting.*

   I served on the advisory committee to help Ross Mandel of the research group working to develop to baseline data for the Goose Creek Watershed and I was not notified of the meeting.

   In previous meetings in other watersheds, I have suggested that DEQ notify the VA Cooperative Extension Office and the Soils and Water Conservation District office and the county government offices to allow plenty of time to advertise the meeting. I do not know if the Extension office in Fauquier was notified. The John Marshall Soil and Water Conservation District was notified approximately one week before the meeting and only asked to have a presenter for the meeting; not to notify their cooperators in the watershed.

   If several weeks notice was given to these various agencies, they could have included the information in a newsletter, advertised in the local papers or done a specific mailing to the people in that area.

   As far as I'm concerned, that meeting on the 20th did not qualify as a Public Meeting and another meeting should be scheduled to properly inform the stakeholders.

   In an attempt to improve public participation and because the Goose Creek TMDL covered 7 impaired sections located in Fauquier and Loudoun Counties, we decided to have two final public meetings. A public meeting was held in each county (Marshall and Leesburg) so that the stakeholders could attend the meeting in their county. While it is simply not practicable for us to give individual notice to everyone in the watershed, we advertised the Goose Creek meetings as follows:

   - a public notice announcing the meetings was published in the Virginia Register on November 4, 2002
   - a mailing announcing the meetings was sent to 80 interested and concerned parties on November 7, 2002
   - legal advertisements were run in the Fairfax Connection, Fauquier Times-Democrat and Loudoun Times-Mirror on November 13, 2002

   In addition to these blanket announcements, public participation was discussed at the October 8, 2002 Goose Creek Technical Advisory Committee (TAC) meeting. This meeting was attended by representatives of Fauquier and Loudoun Counties, the Loudoun and John Marshall Soil and Water Conservation Districts, the Goose Creek Association, and your organization, the Piedmont Environmental Council. Assistance in publicizing the meetings was requested at the TAC meeting, and an e-mail containing the dates and locations of the meetings was sent to the TAC members on October 22, 2002.

   We will not be able to schedule another public meeting; however, we would encourage you to inform anyone you think would be interested in the TMDL that the draft report is available on our website at http://www.deq.state.va.us/tmdl/drftmdls/goose.html.

Comments from Loudoun Watershed Watch

1. *Public Meeting -- The public TMDL meeting presenting the report and explaining its' contents was well-structured and provided valuable information on the TMDL. DEQ is to be commended for conducting such an improved public meeting.*

   DEQ appreciates your positive feedback on the public meeting and looks forward to your continued participation in the TMDL process.

2. *TMDL Model -- The Interstate Commission on the Potomac River Basin appears to have conducted an excellent analysis of the available data. DEQ's selection of this organization, and the decision to use the Hydrological Simulation Program – Fortran model is also to be commended. It is understood that DEQ is switching to another model for future TMDL studies in Loudoun County. It is likely that citizen groups will find it useful to use the HSPF model and the Goose Creek TMDL report as a yardstick against which to compare other TMDL studies and reports.*

   DEQ agrees that ICPRB did exceptional work on the Goose Creek bacteria TMDLs and plans to build on this work as we move forward with other TMDLs in Loudoun County.

3. *Water Quality Restoration Goal -- DEQ is to be commended for not bringing up the controversial issue of changing designated uses of streams in order to apply less stringent water quality standards in the Goose Creek TMDL report as it did in the Catoctin Creek TMDL report. Goose Creek and Catoctin Creek are both scenic rivers that are valuable canoeing and kayaking resources in Loudoun County. Each contains numerous local swimming holes, and is valued for fishing and stream exploration. Citizen groups will be able to work with DEQ on implementing the Goose Creek TMDL to achieve the agreed upon cleanup goal of meeting the primary recreation water quality standards.*

   DEQ is sensitive to stakeholder concerns regarding the addition of a secondary contact use to the Virginia water quality standards.

4. *Scope of TMDL Study -- DEQ's design of the TMDL study is seriously limited, and these limits affect the comprehensiveness of the TMDL study. Large sections of Goose Creek are not sampled by DEQ including entire tributary subwatersheds because of the large size of the watershed and DEQ's limited resources. DEQ elected not to expand the scope of their sampling for the TMDL study to include these unsampled subwatersheds. The TMDL study found that these unsampled subwatersheds will play a vital role in meeting the water quality standards in the lower Goose Creek sections. However, without data, DEQ will not be able to assess the effectiveness of cleanup in these subwatersheds, and will not know whether they are having a positive or negative impact on water quality. DEQ needs to begin working now with local authorities and citizen groups to develop an expanded stream monitoring program in the Goose Creek watershed that will generate bacteriological data that will be accepted by DEQ. These data should be used by DEQ to help assess the TMDL implementation.*

   The resources available for water quality monitoring and assessment and for TMDL development and implementation are limited, and by necessity were focused on those impairments that have been identified and delineated based on data that have satisfied agency quality assurance criteria. The source assessment portion of the TMDL study, however, carefully considered all potential sources of bacteria in the watershed and problem sources throughout the watershed will be addressed in the development of a TMDL implementation plan. Local government and stakeholder input will be invaluable during implementation plan development. DEQ staff attended the January 17, 2003

meeting of the Loudoun Watershed Watch and has already begun working closely with stakeholders to coordinate monitoring in the Goose Creek watershed.

5. *Description of Water Quality Problem – The TMDL report provides an overly narrow description of the water quality problems that exist in the Goose Creek watershed on pages 1- 3. While DEQ may be limited legally to restrict their designation of impaired segments to portions of the stream that have been sampled by DEQ, reasonable scientific inferences need not be similarly limited. Large sections of Goose Creek beyond the impaired segments do not meet water quality standards, and this should be recognized so the scope of the problem can be fully appreciated.*

   This section or the next on "Applicable Water Quality Standards," should also explain that adoption of the new E. coli standard will result in larger sections of the watershed not meeting the new standards and being designated as impaired for use as recreational waters. This is because much of the pollution going into the Goose Creek watershed is from livestock that are capable of contaminating the waters with pathogens that cause human illnesses.

   It is recommended that the following type of information be added to this section of the report:

   > *The impaired segments in the Goose Creek watershed have been designated as the result of water quality data collected at 11 DEQ sampling stations in the watershed and analyzed for fecal coliform bacteria. Impairments have been designated at 9 of the 11 stations. Due to limited resources, the water quality in over 90% of the Goose Creek watershed has not been tested by DEQ and is unknown. However, samples collected by the Loudoun Soil and Water Conservation District have shown other portions are impaired. In addition, this TMDL report also concludes that pollution loads from livestock and human sources that are causing these impairments originate in every subwatershed, and that deep reductions in these loads are needed to meet the new E. coli bacteria water quality standards. Therefore, it is reasonable to assume from these data and findings that large stream segments throughout the Goose Creek watershed do not meet the water quality standards. In general, pollution loads that originate in every subwatershed are affecting the water quality throughout the entire watershed.*

   DEQ maintains that it is reasonable to restrict the assessment of bacteria impairments in Goose Creek to data that have satisfied agency quality assurance criteria. Some data that were not used in the assessment of impairments in the Goose Creek watershed were, however, used to calibrate the watershed model, including the Loudoun Soil and Water Conservation District data referred to in the comment.

   The full impact of the new bacteria water quality standard on the location and extent of impaired segments will not be known until the next assessment cycle is completed in 2004. DEQ prefers not to speculate on potential changes in impaired segments prior to that date. As a result, the information proposed in the comment has not been included in the TMDL report.

6. *Benthic Impairment Time Schedule -- Loudoun County has aquatic life impairments in Goose Creek and Little River that were established by DEQ in 1998. In 2001 DEQ declined to include the impairment in the scope of the TMDL study. This was part of a statewide policy decision to cut back on benthic impairments that was not made known to LWW or LWC. Including the aquatic life impairment in the TMDL study would have expanded the study to include erosion and sediment impacts on aquatic life in the watershed. Further, it would have also required comparable studies to be conducted in a reference stream.*

DEQ how has to go back and conduct these TMDL studies which may have the negative consequence of delaying implementation of the TMDL in Goose Creek. The report indicates that the benthic impairment TMDL will be completed within 9 months (see page 9). However, in the public meeting DEQ advised that the benthic TMDL will not be completed until May 2004 (see presentation slide #6). Further, DEQ would not commit at the public meeting to proceeding with the bacteria TMDL implementation prior to completing the benthic TMDL study. This means that DEQ is considering not proceeding with TMDL implementation for Goose Creek until after May 2004.

DEQ needs to separate the benthic TMDL time schedule from the bacteria TMDL implementation schedule. The BMPs that will effectively control bacteria loads will also be effective in controlling sediment and erosion loads. The TMDL report should be corrected to reflect DEQ's agreement to separate the bacterial TMDL implementation time schedule from the benthic impairment time schedule.

The decision not to include the benthic impairments in the original TMDL study, which began in 2001, was made in anticipation of these segments being delisted. DEQ did not receive EPA's decision to keep the benthic impairments on the 303(d) list until September 2002 and is now moving forward with the benthic TMDLs.

DEQ has set an internal deadline of September 2003 to complete the Goose Creek benthic TMDLs. The deadline under the consent decree, however, is May 2004. Barring any unforeseen difficulties, DEQ plans to submit the benthic TMDLs for Goose Creek to EPA in September 2003, more than 6 months ahead of schedule. DCR has the lead for implementation of the Goose Creek TMDLs and is working on a fair process for allocation of resources and prioritization for all TMDL implementation plans. The target date for implementation plan development for the Goose Creek bacteria TMDLs will not be known until this prioritization process is complete. DCR is also currently developing guidance for stakeholder groups to develop their own implementation plans, including the identification of potential funding sources. This guidance will be made available to the public when it is complete.

7. *TMDL Implementation Time Schedule -- The TMDL report findings clearly establishes that a delay in TMDL implementation is not an option for Goose Creek. The report states:*

> *Loudoun County is one of the fastest growing counties in the nation. During the 1990's the population doubled to about 170,000. Most of this growth occurred east of the watershed, but the area south of Leesburg and west of the Route 7 corridor (part of the Goose Creek watershed) saw significant growth. The population of Loudoun County is expected to increase by 75% over the next decade and by 44% between 2010 and 2020, and more of the Goose Creek watershed around Leesburg is expected to be developed. Loudoun County is currently trying to preserve the rural character of the western portion of the county, including much of the Goose Creek watershed.*

DEQ and Department of Conservation and Recreation (DCR) need to proceed with the implementation phase of the TMDL process immediately. Chapter 6: Implementation on page 120 should include a timetable for and commitment to prompt implementation. It is unacceptable that DEQ's poor judgment and inadvisable policies regarding benthic impairments should lead to the further degradation of Goose Creek watershed. TMDL implementation plans need to be incorporated into the county building and development decision-making process. This is clearly feasible under the county's new zoning ordinances. Further, cost share and grant monies to implement TMDL's need to be accessed as soon as possible. Already state monies have dried up for these purposes. Waiting several years may mean federal monies will also be unavailable.

DEQ and DCR agree that expeditious implementation is important and DCR is working to prioritize TMDLs for implementation.

8. *Limitations of Models– TMDL studies are based upon models that predict the water quality in a stream based upon different pollution loads and flow regimes. These models are critical factors that drive decision-making. As with all models, there are assumption, model limitations, calibration adjustments, and margins of error that must be considered when interpreting and applying model findings. For example, on page 20 the report states that:*

   > *Because the majority of samples were collected under low flow conditions, the BST analysis may not be fully representative of all the hydrological conditions that occur in the Goose Creek watershed.*

   TMDL model results can be misused if these limitations are not clearly delineated. The National Research Council reports "uncertainty must be explicitly acknowledged both in the models selected to develop TMDLs and in the results generated by those models." They conclude that EPA should end the practice of arbitrary selection of a Margin of Safety (MOS) and instead require uncertainty analysis as the basis for the MOS. The MOS section on page 94 should be expanded to better delineate the assumptions, adjustments, limitations and error inherent in the model; and should discuss the extent to which the margin of safety compensates for these factors and other types of uncertainty.

   EPA, DEQ and DCR have agreed that an implicit margin of safety is adequate because point sources in the model are represented as discharging at their maximum allowable loads, which is rarely the case in practice, and because of the extended simulation period, which captured a wide range of hydrological conditions.

9. *Follow-up Monitoring – DEQ has established five ambient monitoring stations in the Goose Creek watershed to document trends or temporal changes in water quality. According to the TMDL report, these stations are also to be used as follow-up monitoring stations to evaluate reductions in bacteria counts and the effectiveness of TMDL implementation. Sampling at the special study stations for the TMDL study are being suspended until implementation plans are developed and controls are implemented.*

   DEQ is also interested in relating stream flow with water quality in follow-up to the finding in the TMDL study that the two are related. Therefore, at least three of the five trend stations are located at gauging stations including two new gauging stations installed in 2001.

   The rational applied by DEQ in establishing these trend stations and follow-up monitoring strategy is not provided in the TMDL report or other documents made available to the public. No input from stakeholders has been sought. Follow-up stations are intended to be located in areas where water quality impairments have been documented, and pollution controls are to be developed and implemented. The purpose of a follow-up station is to determine the effectiveness of the pollution controls. If DEQ has resources to monitor only five trend stations in the Goose Creek watershed, it is not clear how the stations selected will most effectively accomplish this goal. The stations selected and the findings of the TMDL seem to be incongruous in the following respects:

   a) Goose Creek at Rt. 7 – The TMDL establishes that the Lower Goose Creek impaired segment starting at Rt. 7 is the critical point for measuring success or failure in meeting the water quality standards (see Table 5.4). This site is also downstream from the Sycolin Run impairments in which

there is no trend station. It would seem that establishing a trend station at this point would be critical. Yet, there is no trend station anywhere in the Lower Goose Creek watershed. It would seem that one of the two trend stations in the Upper Goose Creek at miles 30 and 44, where the water quality is much better, could be sacrificed for a trend station at Rt. 7.

b) North Fork Goose Creek – Station 1ANOG005.69 is located just upstream of the confluence of the North Fork Goose Creek and Crooked Run. A new gauging station is located just downstream of this confluence and about 1½ mile downstream of the DEQ station. It is not clear why DEQ has elected not to move their trend sampling station down to this gauging station, and to use the station to monitor the combined impact of the North Fork main branch and Crooked Run on Goose Creek. Crooked Run has a high pollution load and will be a high priority subwatershed for cleanup. It is unclear why DEQ continues not to monitor this subwatershed. (It should be noted that station 1AGOO011.23 is located downstream of the confluence of Little River and Goose Creek.)

The Follow-up Monitoring section of the report should be expanded by providing DEQ's overall scheme or plan which explains how the 11 monitoring stations used for the TMDL study will be combined with the three additional trend stations to assess the effectiveness of TMDL implementation in each subwatershed. Study design and assessment design go hand-in-hand. The absence of such a plan in the TMDL report, and failure to share such information at public meetings leaves the impression that planning of the Goose Creek TMDL is ad hoc and lacking in overall vision. The fact that ambient water monitoring stations in the watershed seem to have been changed two or three times in the last two years, and the issues raised above regarding the trend stations give support for raising this issue.

DEQ acknowledges the comments on the proposed monitoring stations and will take the observations provided under consideration. The stations described in the draft Follow-up Monitoring section were selected using criteria described in DEQ's draft report entitled Virginia's Water Quality Monitoring Strategy (December 1999) and were not necessarily intended solely to evaluate the effectiveness of TMDL implementation. DEQ will continue to monitor in accordance with agency strategy and guidance, which will include any type of TMDL follow-up monitoring. However, the priority for DEQ is to focus the agency's limited resources on TMDL development. Therefore, we have revised the language in the TMDL to give us the opportunity to reevaluate the monitoring locations and to allow the flexibility to locate monitoring stations where they will be most effective. The section now reads:

"VADEQ will continue to monitor Goose Creek and its tributaries in accordance with its ambient monitoring program. VADEQ and VADCR will continue to use data from these monitoring stations to evaluate reductions in bacteria counts and the effectiveness of the TMDL in attainment of water quality standards. Intensive sampling, as was conducted under the special study to support development of these TMDLs, will be suspended until an implementation plan has been developed and implementation measures have begun in the watershed."

10. *Statutory Basis to Control Nonpoint Pollution – The TMDL report concluded that the fecal coliform loads to the impaired section of the mainstream of Goose Creek are potentially delivered from the whole upstream watershed. Deep reductions in these loads are necessary to meet the water quality standards. The report also recognized that Loudoun County has had very limited success in the past with voluntary programs to get streamside landowners to implement best management practices that protect stream water quality. Continuing to rely exclusively on voluntary implementation to control nonpoint pollution to meet state water quality standards is unacceptable.*

The State Water Control Board, the Department of Environmental Quality, and the Department of Health need to have statutory authority to require nonpoint source pollution controls to enforce the water quality standards. It is doubtful that TMDL implementation in the Goose Creek watershed will be successful unless the state has authority to enforce the standards. This needs to be a priority initiative of the State Water Control Board. The strategy being adopted by the Board to redesignate recreational uses and allow higher pollution levels will not work in the Goose Creek watershed.

The report makes no such assessment of voluntary efforts to control bacteria in Loudoun County. In fact it states that voluntary efforts are being implemented at an ever increasing rate. Voluntary efforts have been effective in restoring water quality in several watersheds in Virginia, including Page Brook in Clarke County, Owl Run in Fauquier County and the Guest River in Wise County. DEQ remains firmly committed to the achievement of water quality restoration goals through stakeholder participation and voluntary implementation.

11. *Costs and Benefits of Needed Controls – Cleaning up the Goose Creek watershed and prevent further degraded from nonpoint pollution will have high costs as well as huge benefits. Educating county officials and the public about these benefits will be a key step to getting people involved with TMDL implementation. Loudoun County will reap huge benefits from cleaning up its streams of nonpoint pollution just as it has from cleaning up its rivers from point pollution. The costs of point pollution cleanup were high, but still represented only a fraction of the benefits the public received. The same will be true with nonpoint pollution because cleanup means that stream corridors will be protected with smart growth practices, best stormwater management practices, and best agriculture practices. These practices will recharge our ground water aquifers, make our streams and rivers safe for public use, and support enhanced aquatic life. Water is our most precious resource, and the benefit of clean water is life itself.*

    An example of benefits to be derived was recently discussed in a paper titled, "Paving Our Way to Water Shortages: How Sprawl Aggravates the Effects of Drought," prepared by American Rivers, the Natural Resource Defense Council, and Smart Growth America. They report that:

    > *The EPA has found that changes to the hydrology of rivers are second only to the effects of agriculture in the degradation of river systems. The long-term needs of rivers and the long-germ demands of humans are best served by a continual supply of healthy, clean water.*
    >
    > *Freshwater and its associated fish, wildlife, plants, and habitats provide many goods and services to humanity. The benefits fall into three broad categories: (1) direct use by humans for drinking, and other household needs, irrigation, and industrial processes; (2) benefits themselves dependent on freshwater such as fish, shellfish, waterfowl, and other wildlife; and (3) "in place" benefits, such as recreation, transportation, hydropower, flood control, water quality control, and the enjoyment of the outdoors.*
    >
    > *While the value of all services provided by freshwater systems on earth is difficult at best to quantify, studies suggest that it ranges around several trillions of dollars annually, a significant proportion of the gross world product. For instances, American anglers alone spend roughly $24 billion annually on their sport, generating $69 billion for the nation's economy. . . But while we can calculate some of the benefits of freshwater systems to people, the value of clean and healthy drinking water to humanity is inestimable. (p. 16-17)*

    DCR needs a proactive initiative to study the public recreational and fishing opportunities in the Goose Creek (and Catoctin Creek) watershed(s) in cooperation with county authorities and VDOT. The study should guide DCR and the county on the best ways to enhance public recreation in the

Goose Creek (and Catoctin Creek) watershed(s), and thereby emphasize the recreational benefits that Goose Creek offers. Currently, public recreational and fishing access is very limited. For example, there is only one park that provides public access to the main stem of Goose Creek including parking, and canoe and kayak put-in and take-out (at Rt. 7). The study should include an analysis of the benefits to be derived from cleaning up Goose Creek to meet the primary contact recreational use standards.

DCR and DEQ need to work with Loudoun County stakeholder groups to develop an education program to advise the public of these benefits. This will be an essential component of a successful water quality restoration initiative in Loudoun County.

As part of DCR's Implementation Plan development, a cost/benefit analysis is considered. However, the scope of such an analysis is limited to the best management practices (BMPs) themselves. It includes the cost of each particular BMP employed in the watershed when compared to the pollutant reduction expected from that BMP. The broader scope suggested in the comment considers recreational and other values that go beyond those practices utilized for TMDL implementation. We would encourage the citizens of the Goose Creek Watershed who are interested in the public recreational aspects to contact DCR's Division of Recreation Planning as these issues are more aligned to their objectives.

12. *Public Participation – The effectiveness of the TMDL for the Goose Creek watershed will depend in large part upon the quality of the TMDL model, the validity of the study design used to collect data for the model, the quality of the education program developed to achieve voluntary implementation of the needed controls, and the validity of the protocol used to assess results. Regrettably, little meaningful stakeholder input has been invited in any of these areas. Public participation has largely been limited to providing data for the pre-selected model and commenting on accomplished actions. This could be a serious shortcoming because the National Research Council has reported that better water quality modeling is among the most significant of all TMDL-related needs. It is hoped that enhanced stakeholder input will be invited in the future with respect to:*

    a) Selecting the TMDL model that best meets the needs of a particular watershed, including the one to be used to effectively link environmental stressors (and control actions) in Little River and Goose Creek to the benthic impairments;
    b) Developing the study design to provide data for the model;
    c) Developing information on the benefits to be derived from clean water in the watershed;
    d) Developing an educational program to promote voluntary implementation of nonpoint pollution controls; and
    e) Designing the plan to assess the effectiveness of TMDL implementation including the possible inclusion of monitoring by county authorities to supplement DEQ monitoring.

    Some of these components of the overall TMDL program are highly technical and judgments need to rest with trained experts. Nevertheless, every decision involves weighing alternatives and making trade-offs between the ideal and the economically feasible. Stakeholders need to be aware of the tradeoffs being made and the resultant limitations of the programs adopted if they are to give their full support. In this period of severe budget cutbacks in Virginia, significant tradeoffs will be required. Failure to invite meaningful stakeholder input makes stakeholders wary of possible ill-advised policy decisions, such as the decision not to include the benthic impairments in the Goose Creek TMDL study, and the potential impacts such ill-advised decision may have on TMDL implementation.

    DEQ has in the past and continues to invite stakeholder participation in the TMDL process.

13. *DEQ Support for Virginia Water Quality Standards -- DEQ in recent public remarks to explain why they wish to adopt secondary use standards for some streams has characterized the existing standards as being "Draconian." This characterization suggests that the work done by citizen groups for so many years to get the state to implement and enforce Virginia's water quality standards has been misdirected. The E. coli standards recently adopted by DEQ will likely result in more waters being classified as impaired. TMDL implementation will not work unless DEQ and DCR fully support the state's water quality standards, and they aggressively work towards the full restoration of water quality to meet these standards. DEQ should not leave a back door open that will allow polluters to take no corrective action and then get rewarded by the state reclassifying the waters and making the pollution go away on paper.*

    All TMDLs developed in Virginia to date and planned for development have been designed to meet the primary contact water quality standard. The Goose Creek TMDLs were developed to meet both the existing fecal coliform criteria and the new *E. coli* criteria. DEQ and DCR are both committed to and working towards restoring Virginia's waters.

14. *BMP's for Wildlife – DEQ has also said at public meetings that improving the riparian buffer along impaired streams will likely increase wildlife population, and the result will be further stream degradation . DEQ needs to clarify whether or not replacing destroyed riparian buffers is a control method of choice when there is mixed nonpoint pollution loads from agricultural and wildlife sources. DEQ should also provide guidance regarding BMP's for controlling NPS from specific types of wildlife populations including muskrats and beavers.*

    DEQ will take this comment under consideration. Implementation plans developed to date have focused on non-wildlife BMPs, including livestock exclusion from streams and riparian buffer establishment.